DOCUMENT RESUME

ED 437 016 IR 019 817

AUTHOR	Petro, Jim
TITLE	Y2K Survey Results: Counties, Cities, School Districts.
INSTITUTION	Ohio Auditor of State, Columbus.
PUB DATE	1999-05-03
NOTE	18p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*City Government; Computer Security; Counties; Elementary Secondary Education; Information Sources; Information Technology; *Local Government; Problems; School Districts; State Action; *State Government; State Surveys; Statewide Planning
IDENTIFIERS	*Ohio; *Year 2000 (Programming)

ABSTRACT

Survey data obtained in recent audits updated Ohio's local government units' assessment of Year 2000 (Y2K) readiness. The survey was developed with three intended objectives: (1) to provide an accurate assessment of the efforts to remediate the Y2K problem in Ohio's school districts, cities and counties; (2) to identify issues that could affect the Y2K remediation efforts; and (3) to report information and analysis that will be useful to elected officials developing responses to the Y2K problem. In the findings there are a list of recommendations to assist governments in achieving Y2K compliance. These suggestions are grouped into six areas: Project Planning; Priority Setting; Data Exchange; Embedded Systems; Testing and Business Continuity; and Contingency Planning. Additional resources of Y2K information includes survey results and a list of web sites, handbooks and guides. (Contains forty-six pie charts.) (AEF/EPC)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 437 016

JIM PETRO
AUDITOR OF STATE

STATE OF OHIO

Auditor of State Jim Petro Y2K Survey Results

Counties

Cities

School Districts

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

G.W. Kelly

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

IR019817

JIM PETRO
AUDITOR OF STATE
STATE OF OHIO

May 3, 1999

Public Officials and Citizens of Ohio:

I am extending a personal thanks to the public officials and managers that responded to our second Y2K survey.

Since 1996 we have taken a leadership role in making Y2K readiness a priority for units of government in Ohio. Our office was the first audit organization, public or private, to provide written comments about Y2K in the audit reports and/or management letters of all its clients.

In October 1998, we issued our first report on the Y2K readiness of Ohio's government units. Since that time we have seen a heightened awareness of the problem and a greater sense of urgency to resolve it. Since our first report there have been a number of legislative initiative directed at solving the problem. In addition, there has clearly been an increase in executive management's attention at all levels of government.

As part of our continuing effort to support the Y2K remediation efforts of governments in Ohio, we are issuing a report on the results of our second Y2K survey. I am encouraged by survey results that indicate improvements in project management practices. The results of recent audits would indicate that respondents self-assessment of Y2K progress may be overly optimistic. However, I am concerned that the majority of respondents have not developed contingency plans and set dates to test those plans in advance of the Year 2000. At this late date any government that is not fully Y2K ready should consider developing business continuity and contingency plans concurrent with their Y2K remediation efforts.

This report is being issued as a service to Ohio's elected and appointed officials, government employees, and its citizens. I hope you find the information in the report useful in dealing with the Y2K problem.

If you have any questions about this report, please contact Daniel Schultz or Greg Kelly at 1-800-282-0370.

Very truly yours,

Jim Petro

Table of Contents

Introduction.....1

Objective.....1

Scope.....2

Y2K Disclosures in Recent Audits.....6

Best Practices.....6

Contingency Planning.....10

Conclusion.....11

Resources.....13

BEST COPY AVAILABLE

Introduction

On October 22, 1998, Auditor of State Jim Petro issued his first survey on the efforts of Ohio's governmental units to address the Year 2000 computer problem. Computers are critical to the financial and administrative functions of governments and their delivery of services to citizens. The Year 2000 problem is caused by the standard computer programming technique of using two digits to represent a year. If not corrected in time, many computer systems will mistake a 00 entry (2000) for the year 1900. Consequently, these systems will perform inaccurate calculations or cease to operate all together. Some computer programs that perform functions requiring the earlier use of post-2000 dates may be affected even earlier. The report and news media coverage of key highlights from our first survey significantly increased awareness of the problem in both the public and private sector. In addition, it provided government managers and legislators useful information necessary for them to respond to the Y2K problem.

Objective

The first report was intended to achieve three objectives:

1. Provide elected officials, public entity managers, and citizens of Ohio a general assessment of the efforts of governmental units to remediate the risks associated with the Y2K issue;

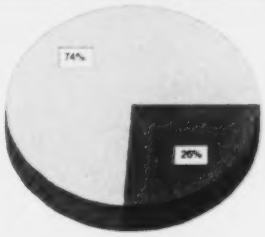
2. Increase the level of understanding and awareness of elected officials and public entity managers about the significant Y2K related risks and their responsibilities to remediate those risks;

3. Provide a forum for the exchange and sharing of "best practices" among governmental units that would benefit the overall remediation process.

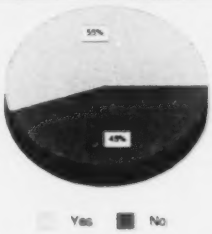
Based on the improvement in responses to critical survey questions, and the positive actions and initiatives taking place among all levels of government we believe those objectives were met.

In designing the second survey, we considered the need to measure the change in responses to critical

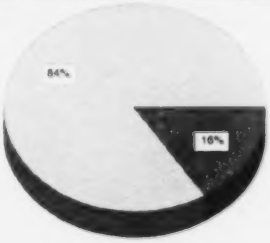
Results of Y2K Status Survey



Have you appointed a Year 2000 (Y2K) Project manager?



Have you developed a project plan which identifies all major tasks to be performed along with target dates to ensure your organization will be utilizing only Year 2000 compliant hardware and software?



Is the Y2K conversion process monitored by senior management to ensure its successful completion?

BEST COPY AVAILABLE

questions from the first survey to the second. We also considered the need to gather new information about the need for financial and technical assistance, and the level of contingency planning. The availability of financial and technical resources, and good contingency planning becomes extremely important as we approach the Year 2000 and possibly earlier for some systems.

In this report we combined the information gathered through surveys of counties, cities and school districts with objective data obtained in recent audits to update our assessment of the Year 2000 readiness of local governmental units in Ohio.

This report is issued to meet the following objectives:

1. Report an accurate assessment of efforts of Ohio's counties, cities and school districts to remediate the Year 2000 problem.

2. Identify issues that could negatively affect the Year 2000 remediation efforts of governmental units.

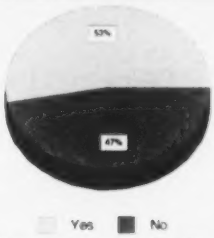
3. Provide information and analysis that will be useful to elected officials developing responses to the Year 2000 problem.

Scope

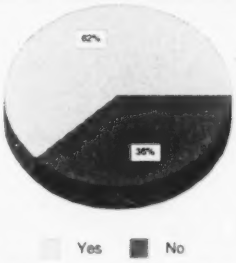
There are currently 4,522 public entities in Ohio subject to audit by this office. We limited our scope to counties, cities, and school districts because collectively their readiness will directly affect all the citizens of Ohio. However, our decision on the scope of this report in no way implies the readiness of units of government not included in our scope are less important. The thought of Year 2000 problems disrupting the processes performed by a water and sewer district is not a pleasant thought. The failure becomes even more serious when you consider the health risk associated with the lack of clean water and the inability to properly dispose of waste. Our survey target population and the number of respondents is presented below:

	Surveys	Responded
County Commissioners	88	12
County Auditors	88	31
County Treasurers	88	11
Cities	250	77
School Superintendents	612	230
School Treasurers	612	125

Results of Y2K Status Survey



Do you have an organization policy to prevent the purchase of non-century compliant software products and use of non-century compliant date fields in future application development?



Do you have an organization policy to determine if previously purchased hardware and software need to be upgraded or replaced to ensure Y2K compliance?

Do you have an organization policy to dictate that any new software licenses require that a product be delivered century compliant by a specific date?

BEST COPY AVAILABLE

In our first report issued, October 22, 1998, we noted two conditions influencing Year 2000 in Ohio: "The year 2000 problem for the State of Ohio as a whole is comprehensive and complex. The problem for each individual unit of government is dependent upon that entity's reliance on technology in the areas of financial reporting, revenue billing and collection, and performing mission-critical functions."

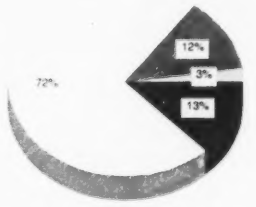
We also stated that, "under the current organization and structure of state and local government in Ohio there is no single office or entity with the authority and responsibility to supervise remediation for the state as a whole. The authority and responsibility for Year 2000 remediation is placed on the elected officials of each individual unit of government."

Consider these conditions in light of the fact that the Year 2000 poses a nonnegotiable deadline, and it is clear that some governments are facing a significant risk. Governments that report they are just beginning to plan their project face a significant risk that time will run out before they complete the project. Likewise governments that don't possess the financial and/or technical resources face similar problems.

The survey information provided by governmental unit respondents indicated a general increase in favorable responses in the areas of project management, awareness, assessment, remediation, and testing. In addition, respondents expressed high levels of confidence that their organizations would not encounter significant Y2K problems.

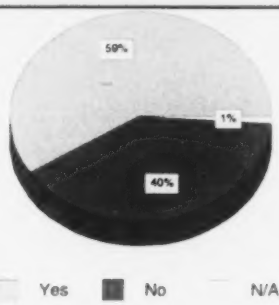
Survey respondents were asked to assess the likelihood their organizations would encounter significant Y2K problems.

They reported their likelihood of encountering serious Year 2000 problems as follows:

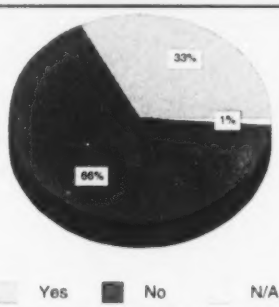


What is your assessment of the liklihood of the entity encountering significant Y2K problems?

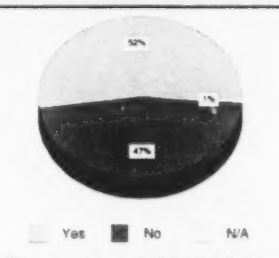
Results of Y2K Status Survey



Do you have necessary funding for Y2K remediation in your FY 99 operating budget?



Have you developed contingency procedures in the event any Mission Critical System will not operate in the Year 2000?



Have you established an awareness program throughout the institution to communicate the problem, potential impact, user responsibilities, and organization policies to resolve the problem?

BEST COPY AVAILABLE

However, based on survey responses to questions related to process control systems, contingency planning and the need for technical and financial assistance we believe their assessment may be too optimistic.

Although favorable responses increased in certain critical areas, we do not believe they improved sufficiently to support such an optimistic assessment about the risk of Year 2000 failure.

Based on our review of Y2K activity in governments across the State of Ohio, we believe five factors create the greatest potential risk to their avoiding significant Y2K problems:

1. Lack of awareness of the true nature and full extent of the problem
2. Lack of financial resources
3. Lack of project management skills and human resources
4. Lack of political and media attention to low profile units of government
5. Lack of time to complete Y2K remediation and contingency planning

Public officials and managers are generally aware of the Year 2000 computer problem. But survey responses indicated that a significant number of government officials may not fully understand the nature and extent of the problem and actions required to resolve it.

With less than seven months until the Year 2000, only 68% of our respondents had taken an inventory to identify all mission critical system and application software for Year 2000 compliance.

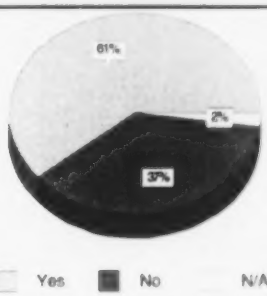
Failure to inventory and assess mission critical systems increases the risk that the remediation effort may not be successfully completed on time.

The cost of fixing the Year 2000 problem will be significant. It is difficult to make comparisons and draw conclusions because there is no single way of classifying and reporting Year 2000 cost that is used by all governments. Some governments use funds from their information technology budgets while others use special Year 2000 appropriations.

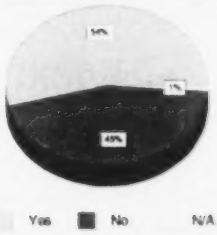
Furthermore, when classifying costs some governments only record vendor purchases thereby failing to

Results of Y2K Status Survey

Has an inventory been taken noting all hardware system software and application software (Mission Critical System) that are not Year 2000 compliant?

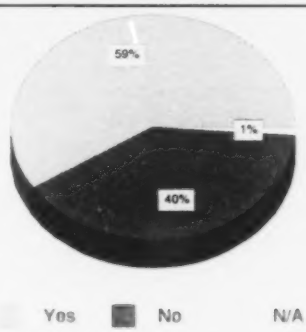


Have you inventoried inter/intra organization interface relationships to your computer applications software?



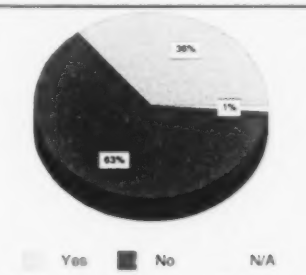
Have you performed a Y2K compliance determination for each component (application software, mainframe, mini-computer, and/or PC hardware, embedded microchips) of your Mission Critical Systems?

capture and identify the costs of Year 2000 tasks performed by their employees. Regardless of the method used to compile cost data, the ability to bear these costs will vary among governments. Based on survey results 40% of our respondents did not have adequate Year 2000 funding in their fiscal 1999 budgets.

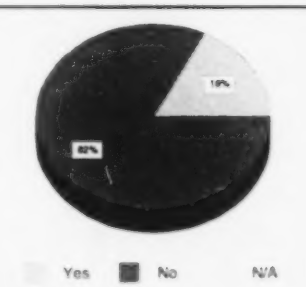


Do you have necessary funding for Y2K remediation in your FY 99 operating budget?

Thirty-six percent reported needing financial or technical assistance from the state while only 18% expected to receive state assistance.

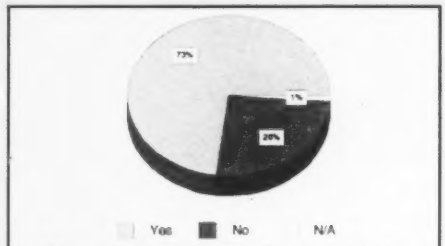


Does your entity need state assistance to make your mission critical systems Y2K compliant?

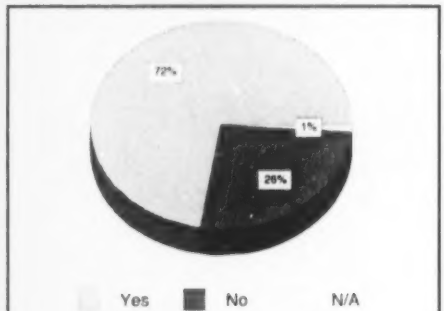


Does your entity expect to receive state assistance to make your mission critical systems Y2K compliant?

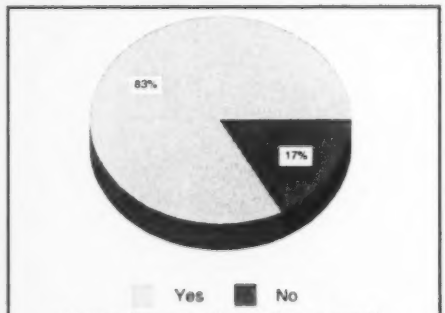
Results of Y2K Status Survey



Does your agency rely on process control systems that may need to be modified to run in Year 2000? (Simple examples include, automated lighting and heating systems, elevators, telephone system, FAX machines, scales, etc.)



Have you begun making compliance changes to your Mission Critical Systems?



Have the vendors of the application software been contacted to determine if their software is Year 2000 compliant?

BEST COPY AVAILABLE

The shortage of trained information technology personnel has been widely reported in the media. There is a high demand for experienced programmers driven by the short time frame and competition from the private sector for technical staff. According to the U.S. Senate report "Investigating the Impact of the Year 2000 Problem," "States can expect formidable challenges in retaining their IT employees and finding outside contractors in an increasingly competitive market." It goes on further to say, "State legislatures may need to take special action to provide flexibility in personnel policies and additional resources to cover increasing Y2K costs."

It seems that the public and media focuses its attention on the Year 2000 condition of governments that are highly visible sometimes overlooking smaller entities whose operations have significant effect on services provided to the public.

Y2K Disclosures in Recent Audits

The Auditor of State has completed its audits of school districts for fiscal year ending June 30, 1998. To date, 376 audit reports issued after the effective date that the Governmental Accounting Standards Board (GASB) required year 2000 information in financial statements have been analyzed. The GASB disclosure required school districts to disclose their stages of addressing the year 2000 issues for internal systems. Seventeen, 4.5%, have not yet entered the first stage, the awareness stage, for addressing year 2000 issues for internal systems. Three hundred and eleven school districts, 82.7%, have completed the assessment stage resulting in an inventory of potentially affected systems, a determination of mission critical status, and a determination of needed remediation.

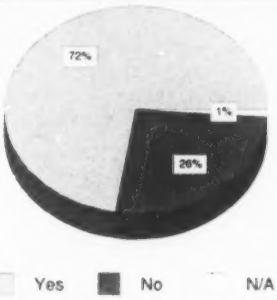
In 115 (36%) of the 376 school district audits issued, our staff provided management with recommendations to improve the management of their Y2K projects. Since school districts utilize the Ohio Educational Computing Network for significant amounts of their computing needs, the extension of school district results to other types of governmental units is not appropriate.

Best Practices

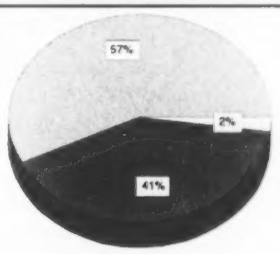
In our first report issued October 22, 1998, we presented a number of best practices in the areas of project management and the awareness, assessment, remediation and testing phases of the Y2K project.

As we rapidly approach the Year 2000 deadline, we believe the issues of thorough testing and contingency

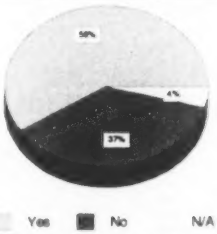
Results of Y2K Status Survey



Have the vendors communicated when Year 2000 compliant versions of their application software are to be compliant?



Have monitoring procedures been estimated to ensure the vendors are taking appropriate action to achieve Y2K readiness?



Based upon the vendor's communication about the release of their compliant software version, is there an established installation date for the compliant release well before the estimated software impact date?

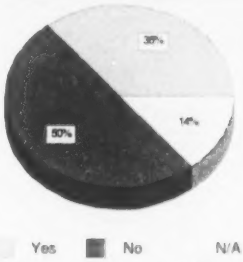
planning are critical and we'll focus on the best practices presented in this report on the areas of testing and contingency planning.

Most experts estimate testing will consume 40-60% of the project resources. Effective and efficient testing is critical to the success of any Y2K project. We recommend that organizations use a non-production, stand alone system to perform Year 2000 testing if resources permit. Prior to testing, you should perform a complete system save that includes all of your application programs and user libraries. When testing is complete, restore the system to its original state before being used for any other purpose. If you must test on your production system, do so by using highly controlled environments after carefully studying and considering the impacts of each testing scenario.

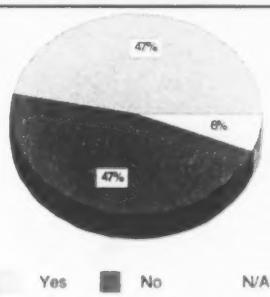
You should make every effort to avoid unpredictable results and retain the ability to recover from problems that could occur when testing on a production system. We recommend the following general procedures:

- Schedule testing of Year 2000 changes immediately after complete system saves.
- Develop a test of basic production activities as part of your testing plan. Perform the basic production activity after the system is returned to a normal production environment.
- Schedule time in your testing plan for recovery activities that might be required based on your test of production activities.
- Make all basic system definition and system object changes while the system is in a restricted state both going to and returning from the Year 2000 testing environment.
- To the extent possible, do not use production objects such as files, journals, subsystems, user IDs when testing. The goal is to create an independent environment within the limits of required activities.
- Design your testing in a modular fashion and do not start any production subsystems that are not required for testing the current module when coming

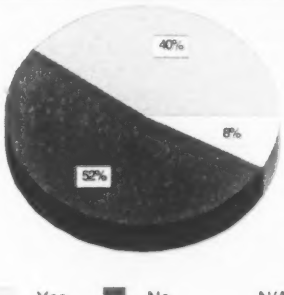
Results of Y2K Status Survey



Has alternative software been identified for those applications where the vendor no longer supports the application or will not have a compliant version in a timely fashion?



Has a data conversion plan been developed to ensure that all current date fields are properly converted to the new date format?



Does your conversion plan identify files requiring conversion?

BEST COPY AVAILABLE

out of restricted state into the Year 2000.

- Any subsystems that are required for testing should be analyzed for potential activity outside the test environment. Potential unpredictable activity might require putting the subsystem's job queue on hold and manually activating only those jobs required for testing.

- Develop testing strategy that ensures verification of program coding (unit testing and integration testing) and validation of program requirements and design specifications (system testing and acceptance testing).

- Stress test the system. Determine if the system can function when transaction volume exceeds normal amounts.

- Perform recovery testing to determine if the system can restart processing after losing system integrity.

- Testing the systems functional requirements and design specifications over a continuous period of time.

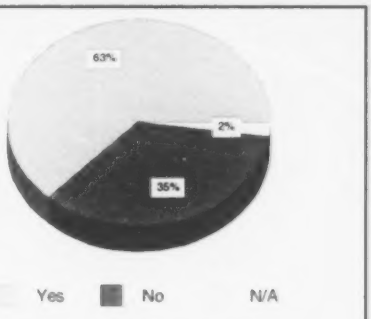
- Test the systems ability to properly process incorrect transactions that can be reasonably expected to occur. For example, programs that accept only 4-digit year formats should generate error messages if data is entered in 2-digit year format.

- Exercise caution when setting the system date to a point where Y2K can be tested. Access controls, particularly end users-access expiration dates, could be affected. In addition, it may affect the license expiration date of some vendor purchased software.

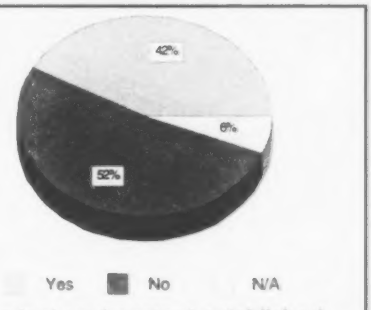
The scenarios for Year 2000 testing depend heavily on the system environment and applications. Some basic Year 2000 testing scenarios that are common for most installations are suggested here:

- Set the clock to test process cycles and automatic functions that are activated on a regular basis. These scenarios can be used to identify Year 2000 exposures that need to be fixed as well as to validate programs after applying Year 2000 solutions.

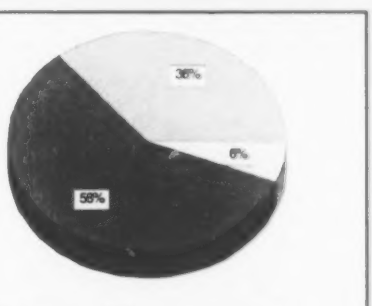
Results of Y2K Status Survey



Is there a plan to test vendor purchased software before Year 2000?



Is a test environment established which is separate from the production environment used for normal processing?



Does your testing plan include a reconcilement process?

BEST COPY AVAILABLE

- Daily
- Weekly
- Semi-monthly
- Monthly
- Bi-monthly
- Quarterly
- Semi-annually
- Annual
- Automatic archiving
- Automatic restart/restore
- On demand

- Test the setting and display of special dates, including:
  - 1900/2/29 - should fail - the year 1900 is not a leap year
  - 1996/2/29 - should succeed - the year 1996 is a leap year
  - 2000/2/29 - should succeed - the year 2000 is a leap year
  - 00/01/01 - should display an unambiguous 4-digit-year date, the value of which depends on the application. For example, 1900/01/01, 2000/01/01, and so on
  - 1999/12/31 - should be able to distinguish between a regular end-of-year 1999 date and a special meaning date. For example, a never-expiring date indicator.
- Test the processing of time-sensitive data with different combinations of data and time.
- Use the current system clock and then test data with dates:
  - before 2000/01/01
  - after 2000/01/01

Results of Y2K Status Survey

Does your test plan include **Unit Testing** to verifies that the smallest defined module (one application date field or hardware component or system software or embedded chip(s)) is operating as intended. Unit testing is usually performed by the software engineer or programmer who modified the module?

Does your test plan include **Integration Testing** to verify that the units (application or component), when combined, work together as intended. Because the units being integrated have already been tested successfully, integration testing focuses on ensuring that the interfaces work correctly and that the integrated software meets specified requirements?

Does your test plan include **Acceptance Testing** is to verify that the complete system satisfies specified requirements and is acceptable to end users?

- Set system clocks before the year 2000, for example 1999/12/31, and then test data with dates:
  - before 2000/01/01
  - after 2000/01/01
- Set the system clock after 2000/01/01 and then test data with dates:
  - before 2000/01/01
  - after 2000/01/01
- Other tests to consider
  - Test to verify that algorithms for performing leap year calculations perform correctly
  - Test to verify that systems function correctly when the fiscal year changes from "99" to "00"
  - Test to verify that systems function correctly on September 9, 1999 (when written in the Gregorian Calendar, "9999")
  - Test to verify that systems function correctly on April 9, 1999 (when written in the Julian Calendar the 99th day of 1999, or once again, "9999")

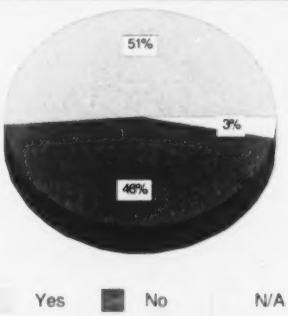
Contingency Planning

We believe most governments are working hard to remediate their Y2K problem. However, system failures will occur for a variety of reasons:

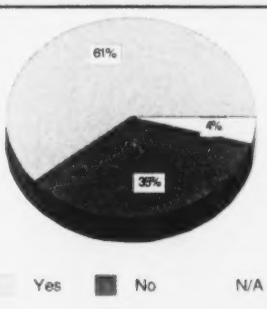
- Delays in remediation project
- Delays in implementing new systems
- Data trading partners may not be ready
- Testing may not cover all date change scenarios

Results of Y2K Status Survey

Does your test plan include **End-to-End Testing** to verify that a defined set of interrelated systems which collectively support an organizational core business area or function, inter-operate as intended in an operational environment?



Does your test plan include testing of the following date of 9/9/99?



Does your test plan include testing of the following date of 1/1/00?

BEST COPY AVAILABLE

- Vendors may not deliver commercial off the shelf software on time.

Therefore, it is imperative that each government plan for contingencies. To assist government in their contingency planning efforts we recommend the following:

- Adopt a contingency planning methodology. The Government Accounting Office presents a four-phase model (Initiation, Business Impact Analysis, Contingency Planning, and Testing) in its guide book "Year 2000 Computing Crisis: Business Continuity and Contingency Planning." These publications are available at the Government Accounting Office's website (http://www.gao.gov)

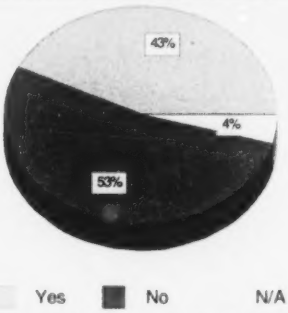
Consider a checklist to facilitate Y2K contingency planning. For example:

- Create Awareness within the organization
- Establish a contingency planning team
- Identify key business functions
- Categorize/prioritize business functions
- Perform risk assessment
- Develop mitigation strategies
- Define alternative solutions and perform trade off analysis
- Establish trigger points
- Obtain management approval
- Develop deployment and implementation procedures
- Test and rehearse contingency plans
- Develop reconciliation and reinstatement procedures

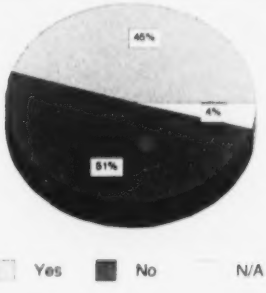
Conclusion

We are encouraged by the progress in the areas of project management, awareness, assessment, remediation and testing indicated in the survey. However, we remain cautious for two reasons. The progress reported does not

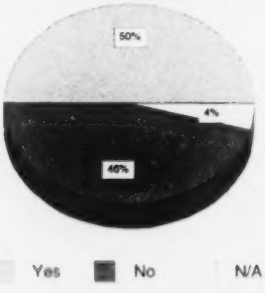
Results of Y2K Status Survey



Does your test plan include testing of the following date for the last day of the week ending 1/7/00?



Does your test plan include testing of the following date for the end of first month (Jan. '00)?



Does your test plan include testing of the following date of 2/29/00?

BEST COPY AVAILABLE

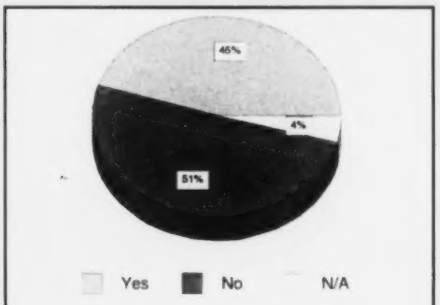
reach a level sufficient for us to conclude only a few governments may have problems. We are also aware that historically self reported assessments tend to be overly optimistic. Therefore we strongly urge responsible public officials to continue to treat Y2K compliance as a major priority until compliance is achieved.

During our financial audits we have made specific recommendations to assist governments based on their unique circumstances. Those recommendations can generally be grouped into six areas; project planning, priority setting, data exchange, embedded systems, testing, and business continuity and contingency planning.

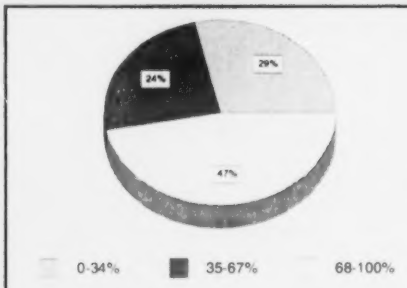
- **Project planning.** Develop and implement a project plan that includes time and cost budgets, a completion schedule and provides four management oversight.
- **Priority setting.** Entities may not have time to fix everything, especially those that got a late start. Therefore, it is critical to establish priorities that focus on critical business processes and life, health, and safety systems.
- **Data exchange.** Identify noncompliant data exchanges and coordinate with data exchange partners.
- **Embedded systems.** Identify mission critical systems controlled by date sensitive microprocessor and take remediation action. (Embedded systems often operate security systems, elevators and HVAC systems)
- **Testing.** Conduct thorough testing including end to end testing of multiple systems that support a business function.
- **Business continuity and contingency planning.** Develop and test a business continuity and contingency plan to reduce the risk that unforseen Y2K problems will cause a significant disruption of the government's operations.

Y2K compliance will not come without a cost. Our survey indicate that 40% of our respondents did not have sufficient funds for their Y2K projects in their FY 99 operating budgets. While 36% of our respondents reported a need for financial assistance. Currently the legislatures is considering the matter of financial assistance for Y2K remediation. I strongly recommend prompt action on this

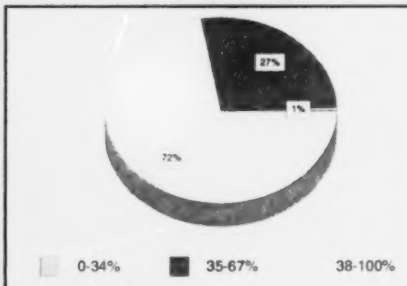
Results of Y2K Status Survey



Does your test plan include testing of the month/quarter/year end processing for '99?



What percent of your entity's mission critical systems will be made Y2K compliant by 3/31/99?



What percent of your entity's mission critical systems will be made Y2K compliant by 6/30/99?

BEST COPY AVAILABLE

matter because the window of opportunity for avoiding Y2K problems is rapidly closing.

The Y2K challenge can be met. While considerable progress is being made there is a lot left to be done. We encourage governments to focus on testing and business continuity and contingency planning. Our office will continue to assist governments in their Y2K efforts through the millennium.

Resources

Some of the resources available to organizations concerning the Y2K problem include web sites, handbooks and guides. Most are freely available to the public and reside in the public domain. The following are some sources of Y2K information.

State Y2K Web Sites

State of Ohio: http://www.state.oh.us/y2k/

Other State & Local:
http://www.y2k.gov/java/info6a.html

Y2K Guidebooks

State of Ohio Y2K Guidebook for Local Government (in development see Ohio Y2K Web Page for future Posting)

State of Ohio Y2K Independent Verification and Validation Guide (in development see Ohio Y2K Web Page for future Posting)

Warren County, Ohio Year 2000 Plan - Contact Gary V. Browning, (513) 933-1114

Texas Guidebook 2000:
http://www.dir.state.tx.us/y2k

Federal Web Sites

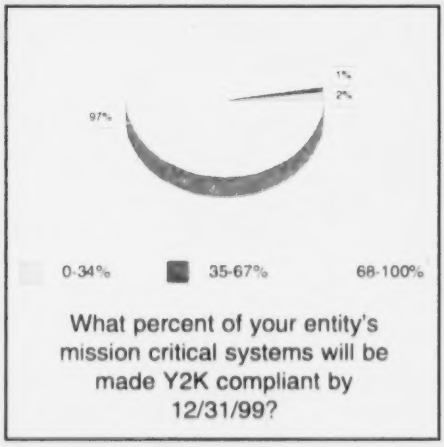
Federal Council on Y2K: http://www.y2k.gov/

City & County

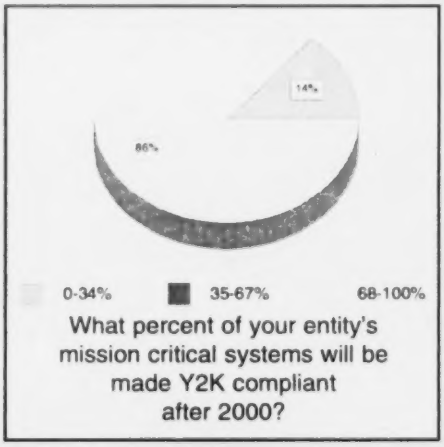
National Association of Counties:
http://www.naco.org/resources/issues/infortech/y2k.cfm

Results of Y2K Status Survey

What percent of your entity's mission critical systems will be made Y2K compliant by 9/30/99?



What percent of your entity's mission critical systems will be made Y2K compliant by 12/31/99?



What percent of your entity's mission critical systems will be made Y2K compliant after 2000?

BEST COPY AVAILABLE

National League of Cities:
http://www.nlc.org/pres-y2k.htm

Other Information

Year 2000 Web Page: http://www.year2000.com/

Y2K - Status: http://www.y2k.status.org/

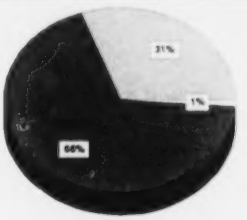
Small Business Administration:
http://www.sba.gov/y2k/

Presidents Council on Year 2000 Conversion:
http://www.y2k/gov

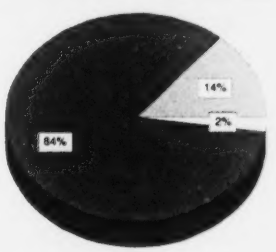
U.S. CIO Council:
http://www.Hpolicy.gsa.gov/mks/yr2000/
cioy2k/htm

BEST COPY AVAILABLE

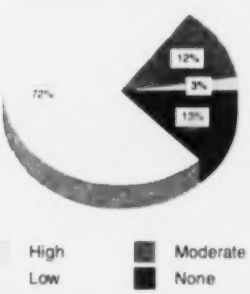
Results of Y2K Status Survey



Have you developed a contingency plan that addresses all the internal and external Y2K issues that could affect your entity?



Have you established a date for testing the entity's contingency plan?



What is your assessment of the liklihood of the entity encountering significant Y2K problems?